

1        **What is claimed is:**

2        1. A reversible ratchet-type wrench comprising:

3                a handle;

4                a head extended from the handle and including a hole, a web being defined between the  
5                handle and the head, a cavity being defined in the web and communicated with the hole, the  
6                web further including a compartment having a first end communicated with the cavity and a  
7                second end communicated with outside, thereby leaving a bridge in the web;

8                a drive member rotatably mounted in the hole of the head, the drive member including a  
9                plurality of teeth formed on an outer periphery thereof;

10                a pawl mounted in the cavity and including a first side with a plurality of ratchet teeth  
11                for releasably engaging with the teeth of the drive member;

12                a switch member including a turn-piece for manual operation and an actuating plate  
13                extended from the turn-piece and rotatably received in the second end of the compartment of  
14                the web, the switch member being switchable between two positions for changing ratcheting  
15                direction of the drive member; and

16                a biasing means mounted in the cavity and between the pawl and the actuating plate for  
17                biasing the ratchet teeth of the pawl to engage with the teeth of the drive member.

18        2. The reversible ratchet-type wrench as claimed in claim 1, wherein an inner periphery  
19                defining the hole of the head includes a first annular groove, and wherein the outer periphery  
20                of the drive member includes a second annular groove, further comprising a C-clip received in  
21                the first annular groove and the second annular groove, thereby rotatably retaining the drive  
22                member in the head.

23        3. The reversible ratchet-type wrench as claimed in claim 1, wherein the biasing means  
24                includes an elastic element and a peg, the pawl further including a second side with a recess,  
25                the peg having a first end movably received in the recess of the pawl and a second end, the  
26                elastic element biasing the second end of the peg for exerting a force to the peg toward the  
27                pawl, thereby urging the ratchet teeth of the pawl to engage with the teeth of the gear wheel.

1 4. The reversible ratchet-type wrench as claimed in claim 3, wherein the actuating plate of the  
2 switch member includes a receptacle that faces the cavity, the elastic element including a first  
3 end received in the receptacle and a second end outside the receptacle and configured to be  
4 attached to the actuating plate, the second end of the peg being received in the elastic element,  
5 the first end of the elastic element being configured to bias the second end of the peg toward  
6 the recess of the pawl.

7 5. The reversible ratchet-type wrench as claimed in claim 4, wherein the drive member is a  
8 gear wheel including an inner periphery adapted to drive a fastener.

9 6. The reversible ratchet-type wrench as claimed in claim 4, wherein the drive member  
10 includes a drive column for releasably engaging with a socket.

11 7. The reversible ratchet-type wrench as claimed in claim 6, wherein the head includes an end  
12 wall with an opening, and wherein the drive member includes a stub rotatably received in the  
13 opening.

14 8. The reversible ratchet-type wrench as claimed in claim 3, wherein the actuating plate of the  
15 switch member includes a first receptacle that faces the cavity, the first receptacle having a  
16 first end wall, the second end of the peg being received in the first receptacle and including a  
17 second receptacle with a second end wall, the elastic element having two ends that are  
18 attached between the first end wall and the second end wall.

19 9. The reversible ratchet-type wrench as claimed in claim 8, wherein the drive member is a  
20 gear wheel including an inner periphery adapted to drive a fastener.

21 10. The reversible ratchet-type wrench as claimed in claim 9, wherein the drive member  
22 includes a drive column for releasably engaging with a socket.

23 11. The reversible ratchet-type wrench as claimed in claim 10, wherein the head includes an  
24 end wall with an opening, and wherein the drive member includes a stub rotatably received in  
25 the opening.

26 12. The reversible ratchet-type wrench as claimed in claim 1, wherein the drive member is a  
27 gear wheel including an inner periphery adapted to drive a fastener.

1       13. The reversible ratchet-type wrench as claimed in claim 1, wherein the drive member  
2       includes a drive column for releasably engaging with a socket.

3       14. The reversible ratchet-type wrench as claimed in claim 13, wherein the head includes an  
4       end wall with an opening, and wherein the drive member includes a stub rotatably received in  
5       the opening.

6       15. A reversible ratchet-type wrench comprising:

7            a handle;

8            a head extended from the handle and including a hole, a web being defined between the  
9       handle and the head, a cavity being defined in the web and communicated with the hole, the  
10      web further including a compartment communicated with the cavity;

11       a drive member rotatably mounted in the hole of the head, the drive member including a  
12      plurality of teeth formed on an outer periphery thereof;

13       a pawl mounted in the cavity and including a first side with a plurality of ratchet teeth  
14      for releasably engaging with the teeth of the drive member, the pawl further including a  
15      second side with a recess;

16       a switch member including a turn-piece for manual operation and an actuating plate  
17      extended from the turn-piece and rotatably received in the compartment of the web, the switch  
18      member being switchable between two positions for changing ratcheting direction of the drive  
19      member; and

20       a biasing means mounted in the cavity and between the recess of the pawl and the  
21      actuating plate for biasing the ratchet teeth of the pawl to engage with the teeth of the drive  
22      member, the biasing means including an elastic element and a peg, the peg having a first end  
23      movably received in the recess of the pawl and a second end, the elastic element biasing the  
24      second end of the peg for exerting a force to the peg toward the pawl, thereby urging the  
25      ratchet teeth of the pawl to engage with the teeth of the gear wheel;

26       the actuating plate of the switch member including a receptacle that faces the cavity, the  
27      elastic element including a first end received in the receptacle and a second end outside the

1 receptacle and configured to be attached to the actuating plate, the second end of the peg being  
2 received in the elastic element, the first end of the elastic element being configured to bias the  
3 second end of the peg toward the recess of the pawl.

4 16. The reversible ratchet-type wrench as claimed in claim 15, wherein the drive member is a  
5 gear wheel including an inner periphery adapted to drive a fastener.

6 17. The reversible ratchet-type wrench as claimed in claim 15, wherein the drive member  
7 includes a drive column for releasably engaging with a socket.

8 18. The reversible ratchet-type wrench as claimed in claim 17, wherein the head includes an  
9 end wall with an opening, and wherein the drive member includes a stub rotatably received in  
10 the opening.

11 19. The reversible ratchet-type wrench as claimed in claim 15, wherein an inner periphery  
12 defining the hole of the head includes a first annular groove, and wherein the outer periphery  
13 of the drive member includes a second annular groove, further comprising a C-clip received in  
14 the first annular groove and the second annular groove, thereby rotatably retaining the drive  
15 member in the head.

16 20. The reversible ratchet-type wrench as claimed in claim 15, wherein the compartment of the  
17 web has a first end communicated with the cavity and a second end communicated with  
18 the outside, thereby leaving a bridge in the web.

19 21. A reversible ratchet-type wrench comprising:

20 a handle;

21 a head extended from the handle and including a hole, a web being defined between the  
22 handle and the head, a cavity being defined in the web and communicated with the hole, the  
23 web further including a compartment communicated with the cavity;

24 a drive member rotatably mounted in the hole of the head, the drive member including a  
25 plurality of teeth formed on an outer periphery thereof;

1           a pawl mounted in the cavity and including a first side with a plurality of ratchet teeth  
2           for releasably engaging with the teeth of the drive member, the pawl further including a  
3           second side with a recess;

4           a switch member including a turn-piece for manual operation and an actuating plate  
5           extended from the turn-piece and rotatably received in the compartment of the web, the switch  
6           member being switchable between two positions for changing ratcheting direction of the drive  
7           member; and

8           a biasing means mounted in the cavity and between the recess of the pawl and the  
9           actuating plate for biasing the ratchet teeth of the pawl to engage with the teeth of the drive  
10           member, the biasing means including an elastic element and a peg, the peg having a first end  
11           movably received in the recess of the pawl and a second end, the elastic element biasing the  
12           second end of the peg for exerting a force to the peg toward the pawl, thereby urging the  
13           ratchet teeth of the pawl to engage with the teeth of the gear wheel;

14           the actuating plate of the switch member including a first receptacle that faces the cavity,  
15           the first receptacle having a first end wall, the second end of the peg being received in the first  
16           receptacle and including a second receptacle with a second end wall, the elastic element  
17           having two ends that are attached between the first end wall and the second end wall.

18       22. The reversible ratchet-type wrench as claimed in claim 21, wherein the drive member is a  
19           gear wheel including an inner periphery adapted to drive a fastener.

20       23. The reversible ratchet-type wrench as claimed in claim 21, wherein the drive member  
21           includes a drive column for releasably engaging with a socket.

22       24. The reversible ratchet-type wrench as claimed in claim 23, wherein the head includes an  
23           end wall with an opening, and wherein the drive member includes a stub rotatably received in  
24           the opening.

25       25. The reversible ratchet-type wrench as claimed in claim 21, wherein an inner periphery  
26           defining the hole of the head includes a first annular groove, and wherein the outer periphery  
27           of the drive member includes a second annular groove, further comprising a C-clip received in

1 the first annular groove and the second annular groove, thereby rotatably retaining the drive  
2 member in the head.

3 26. The reversible ratchet-type wrench as claimed in claim 21, wherein the compartment of the  
4 web has a first end communicated with the cavity and a second end communicated with  
5 outside, thereby leaving a bridge in the web.

6 27. A reversible ratchet-type wrench comprising:

7 a handle;

8 a head extended from the handle and including a hole, a web being defined between the  
9 handle and the head, a cavity being defined in the web and communicated with the hole, the  
10 web further including a compartment communicated with the cavity;

11 a drive member rotatably mounted in the hole of the head, the drive member including a  
12 plurality of teeth formed on an outer periphery thereof;

13 a pawl mounted in the cavity and including a first side with a plurality of ratchet teeth  
14 for releasably engaging with the teeth of the drive member, the pawl further including a  
15 second side with a recess;

16 a switch member rotatably received in the compartment of the web, the switch member  
17 being switchable between two positions for changing ratcheting direction of the drive member;  
18 and

19 a biasing means mounted in the cavity and having a first end slidably received in the  
20 recess of the pawl and a second end attached to the switch member for biasing the ratchet teeth  
21 of the pawl to engage with the teeth of the drive member.

22 28. The reversible ratchet-type wrench as claimed in claim 27, wherein an inner periphery  
23 defining the hole of the head includes a first annular groove, and wherein the outer periphery  
24 of the drive member includes a second annular groove, further comprising a C-clip received in  
25 the first annular groove and the second annular groove, thereby rotatably retaining the drive  
26 member in the head.

1 29. The reversible ratchet-type wrench as claimed in claim 27, wherein the biasing means  
2 includes an elastic element and a peg, the peg having a first end movably received in the  
3 recess of the pawl and a second end, the elastic element biasing the second end of the peg for  
4 exerting a force to the peg toward the pawl, thereby urging the ratchet teeth of the pawl to  
5 engage with the teeth of the gear wheel.

6 30. The reversible ratchet-type wrench as claimed in claim 29, wherein the switch member  
7 includes a turn-piece for manual operation and an actuating plate extended from the turn-piece  
8 and rotatably received in the compartment of the web, the actuating plate of the switch  
9 member includes a receptacle that faces the cavity, the elastic element including a first end  
10 received in the receptacle and a second end outside the receptacle and configured to be  
11 attached to the actuating plate, the second end of the peg being received in the elastic element,  
12 the first end of the elastic element being configured to bias the second end of the peg toward  
13 the recess of the pawl.

14 31. The reversible ratchet-type wrench as claimed in claim 30, wherein the drive member is a  
15 gear wheel including an inner periphery adapted to drive a fastener.

16 32. The reversible ratchet-type wrench as claimed in claim 30, wherein the drive member  
17 includes a drive column for releasably engaging with a socket.

18 33. The reversible ratchet-type wrench as claimed in claim 32, wherein the head includes an  
19 end wall with an opening, and wherein the drive member includes a stub rotatably received in  
20 the opening.

21 34. The reversible ratchet-type wrench as claimed in claim 30, wherein the actuating plate of  
22 the switch member includes a first receptacle that faces the cavity, the first receptacle having a  
23 first end wall, the second end of the peg being received in the first receptacle and including a  
24 second receptacle with a second end wall, the elastic element having two ends that are  
25 attached between the first end wall and the second end wall.

1 35. The reversible ratchet-type wrench as claimed in claim 30, wherein the compartment of the  
2 web has a first end communicated with the cavity and a second end communicated with  
3 outside, thereby leaving a bridge in the web.

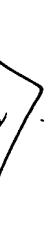
4 36. The reversible ratchet-type wrench as claimed in claim 27, wherein the drive member is a  
5 gear wheel including an inner periphery adapted to drive a fastener.

6 37. The reversible ratchet-type wrench as claimed in claim 27, wherein the drive member  
7 includes a drive column for releasably engaging with a socket.

8 38. The reversible ratchet-type wrench as claimed in claim 37, wherein the head includes an  
9 end wall with an opening, and wherein the drive member includes a stub rotatably received in  
10 the opening.

11 39. The reversible ratchet-type wrench as claimed in claim 27, wherein the compartment of the  
12 web has a first end communicated with the cavity and a second end communicated with  
13 outside, thereby leaving a bridge in the web.

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